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STATISTICAL REPORT

ON THE

EDINBURGH EPIDEMIC FEVER OF 1843-44.

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HAVING already investigated the *circumstances* of the patients, and also the *general* and *special* features of the fever, we propose now to examine into the nature of those secondary disorders, or *complications*, which at times accompanied the attack. As a general rule it may be stated that there was a greater liability to accidental complications in this disease than in our more usual forms of fever. These complications, in very many cases, became primary in point of importance; the general characters and symptoms of the fever being much deranged, and even lost in the urgency of the local symptoms.

By far the most frequent and the most important of the complications was connected with

INFLAMMATORY DISEASE OF THE MUCOUS MEMBRANE OF THE LOWER PART OF THE INTESTINAL CANAL.

This inflammatory action affected the mucous membrane of the bowels, and principally of the great intestine, though in the fatal cases it was almost always impossible to determine

where the lesion had originated, as the whole membrane was implicated, from one or two feet above the ileo-cœcal valve to the anus. In these cases, the most prominent symptom was

DIARRHŒA.

Thirty-three of the cases presented this symptom, but in 11 of these the attack was insignificant, and easily restrained. Of the remaining 22 cases, 8 proved fatal.

The attack of diarrhœa generally occurred late in the fever, —that is, of the 33 cases, 30 were seized with diarrhœa after the day of relapse; and one-half of these were not affected till after the second crisis. Two of these latter cases had a first attack of diarrhœa in the intermission. In 3 cases, the looseness occurred during the primary attack. From these facts we ought perhaps to regard this diarrhœa rather as a sequela than as a complication. The more severe forms of the complication did not manifest a preference for any particular stage; but in the fatal cases, the attack occurred after relapse. Of the 3 cases affected in the primary attack, 2 were very trifling in severity. The opinion that the diarrhœa was in some cases critical, is supported by the facts, that in 6 of the 33 cases, it occurred at the precise time of the crisis, and lasted only for a single day in four of these. In these cases, however, the sweat is reported to have occurred in all but two, and in these two, it was not ascertained positively that it had not existed; while in two of the 6 cases, the perspiration was unusually profuse.

The Age of these 33 cases was ascertained in 32 instances, and was as follows :—

Above 10, and under	30,	17 cases, or	14·5 per cent.
30,	50,	9	17 per cent.
60,	70,	6	21·4 per cent.

The Habits of the 33 patients who became affected with diarrhœa, were intemperate in 7; and of these 3 died.

The Attack of diarrhœa was in most cases *sudden*, 8 or 12 evacuations taking place within the first twenty-four hours. In a few cases, it was more gradual in its accession. The diarrhœa was in some cases ushered in by rigors, vomiting, and abdominal pains, but in the greater number no shivering occurred. Pain and tenderness of the abdomen existed only in 7 of the cases, and was observed chiefly in the lower parts of the belly. Vomiting was troublesome only at an advanced stage, in the cases presenting this complication. In the most severe cases it often was most harassing. The evacuations were scanty, largely mingled with blood and mucus; straining, tenesmus, and griping pain at times existed. In the less urgent

cases, the stools were dark, slimy, and feculent, only occasionally tinged with blood. The pulse in no case attained the highest rates of frequency, and in some of the most severe, it was remarkably slow, not exceeding 80, and at times 60, in the minute.

In two instances, the diarrhœa followed immediately the administration of a purge: both were severe; one of them proved fatal.

The Duration of the attack of diarrhœa was very various, according to its severity, and also apparently according to the treatment in the first days of its existence. Of the fatal cases, the most prolonged died on the 25th day from the attack of diarrhœa, being the 48th from the accession of the fever. The most rapid case died within 7 hours of the occurrence of diarrhœa. Of the 33 cases of this complication, 8 proved fatal; in 5 of these the diarrhœa occurred after the second crisis, in 3 during the relapse. In all of these cases, the patients were advanced in life: 3 of them were intemperate.

The Nature of the lesion which existed in these cases will be best explained by the 4 following cases, in which I had an opportunity of observing, by *post-mortem* investigation, the morbid state of the intestinal mucous membrane, in different stages of advancement.

First, A man, Turnour, in whom the diarrhœa occurred at an advanced stage of a severe attack of the fever. He died within seven hours of the time when it set in, and the evacuations were largely mingled with blood. On examination, the lesion was found to be limited to the mucous surface of the sigmoid flexure of the colon. It existed in the form of small disconnected arborescent elevated patches and punctuations, of a brilliant red colour, irregularly scattered over the whole circumference of the gut. The mucous membrane in the vicinity of these patches was healthy in appearance and consistence. This case may be presumed to represent the earliest stage of the morbid condition, which in the other 3 cases attained a much more advanced state before the fatal event.

Second, In these last cases, the morbid appearances were so similar, that they may be comprehended under one general description. The lesion occupied the great intestine, and from 18 to 40 inches of the ileum, which presented, on its mucous surface, all the varieties of deep red, purple, and dingy brown colours, there being the most intense vascular injection. The mucous surface, more especially of the great intestine, was coated with a discoloured membrane or pellicular effusion, which had the appearance of having been separated here and there in patches and spots. In one of these 3 cases, there were scattered over the mucous surface numerous cup-shaped, circular ulcers, with inverted and thickened edges. These were most numerous in the lower portion of the bowel.

The mucous membrane of the intestine was generally soft in these cases. In one instance, the gastric mucous membrane also was softened, and presented many points and irregular shaped small patches of effused blood. In this case, the stomach and bowels contained a large quantity of a fœtid dark green grumous fluid.

Pulmonary Complications.—The complications connected with the organs of respiration were for the most part unimportant. They occurred in the form of catarrh, bronchitis, and pneumonia, singly or conjoined. Cases of catarrh scarcely merit a place amongst the complications. They were about 50 in number, and required treatment in a very few cases only, and the symptoms generally abated with the febrile paroxysm.

Bronchitis was a more troublesome attendant of the attack. In every case of any severity, the patient was ascertained to have been more or less subject to chronic chest complaints. None of these attacks proved very serious, and in all of them in which milder means failed, cupping between the scapulæ, followed by nauseating doses of antimony, proved most useful. In several cases the dyspnœa, cough, and expectoration were considerable, but in 3 cases only was recovery materially impeded by this complication.

Pneumonia occurred in 6 cases. In 4 of these there was accompanying disease of the mucous membrane of the bowel, which proved fatal in 3 cases—the 4th died from gangrene of the lungs. Of the 6 cases complicated with pneumonia, 1 only recovered.

Cerebral Complication.—In 1 case* only, we have proof that this existed. A temperate man, aged 40, was admitted after the occurrence of relapse; the previous progress of the attack appeared to have been mild. On the morning of the 5th day of his relapse, he became unexpectedly affected with delirium: Coma, stertorous respiration, and puffing of the lips quickly followed, and he died after 36 hours. The lateral ventricles of the brain contained an ounce and a half of serum, the fornix, septum lucidum, and, in part, the walls of the ventricles, were softened.

SEQUELÆ.

The peculiar pains of the limbs, &c., which have attracted such universal observation, may be ranked as the most frequent of the sequelæ. I wish to distinguish from this a form of sequelæ that occurred in two cases, and which may with propriety be styled *rheumatic inflammation.* In both cases the hand was the seat of the attack, the joints presented pain, swelling, redness, heat, and stiffness. The attack endured for a few days only—yielding to simple treatment.

In 1 case, a rigid state of the masseter muscles prevented the

* This case occurred during my absence from town for a few days, and was reported by Dr Paterson.

movements of the lower jaw; and in 1 the same effect was produced by inflammation of the right maxillary articulation, which was tender, and presented a circumscribed swelling. The parotid gland was enlarged in only 1 case.

Œdema of the Lower Extremities was very frequent. The degree of the œdema was in most cases quite insignificant; in many it was such as to demand the horizontal posture, bandaging, &c.; and in a few cases the limbs were affected as high as the hip joints. In the very worst of them, it did not endure longer than the first 8 days of convalescence. Treatment did not appear to exert much influence on the swelling, but it always disappeared with the improving strength.

Partial Paralysis of the fore-arm occurred in two cases—in one of them during the intermission. In both cases the attack was sudden, with accompanying numbness, and was succeeded by slow but steady improvement. The paralytic state continued more or less for several weeks, indeed had not entirely disappeared at the time of dismissal. There was no accompanying head symptom.

Erysipelas, of a slight description, and confined to the parts around the eye, occurred in 1 case. The attack occurred in the intermission.

Peritonitis.—This occurred in 1 female; she was admitted late in the fever, and was at the time suffering from the peritonitis. Temporary benefit only was derived from treatment, and she died on the thirty-eighth day from the accession of the fever. The peritoneal surfaces of the bowels adhered at all their points of contact, giving rise to the formation of circumscribed sacs of various sizes, filled with purulent fluid. There was a copious formation of lymph in flakes, and coating the peritoneal surface.

The sequelæ which have still to be noticed were comparatively frequent in their occurrence, but as they rarely existed till a more advanced period of the convalescence, subsequent to dismissal from the hospital, the opportunities of observing them in connexion with the present cases have been very limited.

Cutaneous Eruptions.—Of our cases, only 2 presented this sequela previous to dismissal from the hospital; 1 in the form of scabies purulenta, and in 1 there was universally over the surface an abundant lichenous eruption. In these cases the eruption endured 12 and 8 days.

The Post-febrile Ophthalmitis.—This is the last of the sequelæ to be noticed; and we shall confine our attention to such of our cases as were affected during their residence in the hospital. In 2 cases only did the attack occur at this early date, and in none of these did it present the severity which has been ordinarily met with. In both cases the attack occurred on the second day of the relapse. In 1 of them, first the right, and subsequently the left eye became affected. Pain was complained of

in the ball of the eye; the injection of the conjunctiva was very considerable, the sclerotic being but little affected; the pupil was unaffected, and vision unimpaired; the light was borne well; the flow of tears was, in 1 of the cases, remarkably increased. The most simple treatment only was necessary.

MORTALITY.

Of the 220 cases, 19 died. The proportion in these cases, then, is 8·63 per cent., or one in 11·578.

The Sex of these 19 fatal cases was male in 14 instances, and female in 5.

The Age in these 19 fatal cases was as follows.

Age.	No. of Fatal Cases.		Proportion of Mortality, per cent.
Under 30,	1*	or	0·74
Above 30, and under 40,	3	or	9·
Above 40, and under 50,	3	or	15·
Above 50, and under 60,	7	or	36·
Above 60,	5	or	55·

The Habits.—Of these 19 fatal cases, 6 of the patients had been so dissipated in their habits that their health was much impaired. In several of them, the symptoms presented those peculiarities which are, by common consent, associated with this depraved state of the constitution. In one case, death occurred on the fourth day with well marked symptoms of delirium tremens. In 3 of these 6 cases the fatal event was more immediately induced by complication with the inflammatory disease of the intestinal mucous membrane. In the 2 remaining cases the patients struggled through both the primary attack and the relapse, and died late in the disease; one of them without any very prominent local symptom, the other with obscure head symptoms, and in a low typhoid state.

The Circumstances, or more immediate cause of the *deaths*, may now be considered. We shall investigate the existence, or not, of complication in these cases, and the date of the fatal event. It is necessary, however, to exclude three of the fatal cases from this investigation; as in these cases, the very existence of the fever could scarcely be satisfactorily ascertained, owing in part to the stage of the attack in which the patients were admitted, and in part to the urgency of the symptoms connected with the local diseases under which they laboured. These cases were the two which died from peritonitis and double pneumonia, and the case of an old female,† who at the time of admis-

* This man was of very dissipated habits, and broken constitution.

† This case is calculated, at page 1, amongst the deaths from the dysenteric complication.

sion was suffering from urgent diarrhœa, and was in a state of great prostration.—She died within four days of her admission.

Of the remaining 16 fatal cases, 8 were complicated and 8 were simple. The complicated cases presented in 7 instances the inflammatory disease of the intestinal mucous membrane; in one case, cerebral softening. Of the 8 simple cases, the constitutional health was ascertained to be much impaired, in 3 of them by old standing disease, or by habits of intemperance.

The Date of the fatal event in these 16 cases was as follows. The 8 simple cases died, in 4 instances, in the primary attack; in one, in the intermission; in 3, in the relapse. The 8 complicated cases died, in 2 instances, in the relapse,—one of these being the case of cerebral softening; in 6 instances, the death occurred subsequent to the second crisis,—in one of them, as late as 28 days.

In some cases the fatal event supervened unexpectedly and very suddenly. In 2 of the simple cases, this occurred; in one of these on the seventh day, and previous to any crisis, after a few hours' uneasiness, and complaint of pain and tenderness of the upper part of the belly. The previous symptoms had been mild. In the other case, death occurred on the eighteenth day, during the intermission, and without any previous complaint. The patient was found in the morning in an easy posture, and dead, as if for some hours. A similar case occurred to me in private,—a female aged 30, of very full and plethoric habit, who had suffered from a smart attack of the fever with jaundice, but appeared to be doing well. About the period of the first crisis, without previous warning, and within half an hour of having expressed herself as feeling easy, she was found dead.

MORBID ANATOMY.

The morbid anatomy of the most important class of the fatal cases has been already considered in the section on the inflammatory complication of the intestinal mucous membrane. The prominent morbid appearances in the *simple* cases will be shortly stated in this section. Dissection was made only in three of these cases.

In one man who died suddenly on the seventh day, the skin presented a faint, dingy, yellow colour; there existed a universal and considerable deposit of fat on the surface, and in the omentum and mesentery. The liver was enlarged, and loaded with blood; it weighed 6 pounds, the spleen weighed 16 ounces. The mucous membrane of the stomach and bowels appeared healthy. The heart and lungs were altered by chronic disease. In the two remaining cases which were examined, one of them having died suddenly during the intermission, the other having

sunk gradually late in the relapse, no organic lesion was discovered after the most careful examination.

In three of the cases which died from the dysenteric complication *subsequent* to the second crisis, the weights of the liver and spleen corresponded to the natural standard.

In the third case of sudden death, which occurred about the period of the first crisis, mentioned in the previous section, there existed immense deposit of fat, the liver and spleen were much enlarged. The precise weight of the organs could not be taken, but the spleen was at least three times the natural size.

TREATMENT.

We shall not occupy space by explaining the use of several of the more usual remedies, such as emetics, purgatives, diaphoretics, &c.; but we shall rather confine our attention to the subjects of *blood-letting, quinine, opium, and stimulants.*

Blood-letting.—General bleeding was practised only in a few of the earlier cases which came under treatment. The more urgent complaints were generally relieved by it, but it did not exert any influence on the subsequent progress and duration of the attack. When the remedy was indicated, a small evacuation of six or eight ounces was generally effectual, relieving headache, local pains, &c.

Bleeding was practised during a febrile paroxysm in 10 cases; in 7 of these with immediate effect on the pulse, or faintness; and with speedy relief to headache and other uneasiness in 5 of these 7 cases. In 2 cases no immediate effect followed the bleeding, but subsequent relief was afforded. In one case no effect whatever followed the bleeding. In no case was the effect so marked as in the following:—A stout young woman relapsed on the thirteenth day; within three hours the pulse was 112, skin hot, and headache severe; she was bled to twelve ounces, with effect on the pulse, and speedy relief to the headache; she continued to feel easy, slept some, and sweated in the evening; she had a quiet night, and on the following day the pulse was 84—otherwise well. On the second day she had a rigor succeeded by headache, hot skin, pulse 120, and the other attendants of relapse. This relapse lasted three days. The average residence of the cases which were bled, ascertained from 7 of them, was 24·57 days. The average residence ascertained from 14 cases which were not bled (selected at random), was 27·71 days.

The State of the Blood drawn.—In 9 of the cases the state of the blood was reported. It was natural in 3. It was more or less sizy on the surface, the crassamentum being firm, in 4. The buffy coat existed in two of these (9) cases; in the second cup only, in one; in the other case the clot was cupped and partially adherent to the vessel in which it was contained. The

serum was scanty in 2 of the (9) cases. The clot was preternaturally soft in 1. In both the cases in which the blood presented the buffy coat, the bleeding afforded speedy relief to both patients—in the one to abdominal pain, in the other to headache; this second case had two threatenings of diarrhœa, the first being several days subsequent to the date of the bleeding. I had the opportunity of seeing a third instance of well marked buffy coat in the case of a man who was bled in the relapse, in consequence of a violent *bronchitic* complication.

Cupping.—This was found necessary in some cases of headache, and in general it proved very effectual. In cases of the bronchitic complication, cupping between the scapulæ was most serviceable. Leeches were frequently and largely used, with much benefit, for the relief of headache, epigastric tenderness, &c.

Quinine.—A trial of this remedy was made in a few of our earlier cases, but, discouraged by its apparent inefficacy, we very soon desisted from its use. The dose in which it was given was from two to four grains three or four times a-day; and its use was, for the most part, commenced on the second or third day after the first crisis.

Of 24 patients who took quinine, 22 were ascertained to relapse; the 2 patients who did not relapse left the hospital on the fifteenth day of their fever—one of them having a persistent whiteness of the tongue, which augured a probable relapse.

The date of the relapse in 21 of these cases was as follows:—

On the thirteenth day, 4 cases,
... fourteenth ... 7 ...
... fifteenth ... 4 ...
... sixteenth ... 2 ...
... seventeenth ... 2 ...
... eighteenth ... 1 ...
... nineteenth ... 1 ...

Which gives as the average date of relapse in these cases, the fifteenth day. This corresponds exactly with the average date of the relapse struck from the whole of our cases. In these 21 patients treated by quinine, the relapse occurred most frequently on the fourteenth day, as was the case in those treated without quinine.

The duration of the relapse was reported in 16 of these 21 cases. The second crisis occurred on the second day in 5 cases,
... ... third ... 4 ...
... ... fourth ... 3 ...
... ... fifth ... 4 ...

The average date of this crisis, reckoned from these 16 cases, is the third day,* which corresponds to the average date of its occurrence in the cases treated without quinine.

* Counting from the day of relapse.

It will be observed, by comparing the preceding table with the one at page 19, that a larger proportion of the cases treated by quinine presented the second crisis on or before the third day than those cases treated without quinine. The proportions are, in the cases treated without quinine, 44, or 41·9 per cent ; in the cases treated by quinine, 9, or 56·2 per cent.

From this return it appears that the quinine exerts an influence solely on the duration of the relapse. This opinion is strengthened by the fact that, in the four cases in which the second crisis was so late as the fifth day, the quinine was not given regularly, or only for a period of two days.

Two of these (16) patients having been bled, the modification of the relapse in their cases may have been connected with the blood-letting. In one of them the second crisis did not occur till the fifth day, and the quinine had been given irregularly. In the other the second crisis occurred on the second day; the bleeding was practised on the previous day, and the quinine had been given with regularity.

Opium.—This, in various forms, proved a most useful remedy. Its good effects were very marked in the treatment of *vomiting*, "*the pains*," *sleeplessness*, and *diarrhœa*. The disease stood the effects of opium well at all stages; but I abstained from its use, unless some one of the above symptoms was urgent, till an advanced stage of the attack. When vomiting was obstinate, an effervescing draught with 12 or 15 drops of laudanum was administered, and, if necessary, repeated a second and a third time in the course of the day, most generally with the desired effect. Opiate enemata also answered well in these cases.

"The pains" and sleeplessness were very frequently associated; and a draught with thirty drops of the solution of morphia sufficed to give speedy relief, more particularly in the first days of convalescence. In some cases, in which the pains continued obstinate, the opium, as well as other remedies, proved quite ineffectual. By far the most important use of opium was in the treatment of the dysentery. It was not until after the repeated failure of several other methods of treatment that opium was employed. But so marked was the benefit from its use, that it was in every subsequent case resorted to at once, with the most satisfactory results. It appeared essential that it should be given immediately on the accession of the diarrhœa, as it did not act at all favourably in cases of any standing. When given on the first day, the number of alvine evacuations was immediately reduced,—from seven or twelve to three or four; and in a few days complete cure resulted. The dose in which the opium was given varied with the urgency of the diarrhœa; generally, a grain every sixth, fourth, or third hour; and this was again and again continued for several days with the best effect.

Stimulants.—As a general rule stimulants were not required in this form of fever. They were urgently demanded, chiefly towards the close of fatal cases; and few of these sank from *mere depression*, which there was any hope of remedying by stimulants. Small quantities of wine were in some cases beneficial immediately after a critical period—relieving the sense of exhaustion which at times existed.